

SOMMER, JENNIFER L., M.A. Efficacy of Parent Training for Children with Attention-Deficit/Hyperactivity Disorder: A Therapeutic Component Analysis. (2007)
Directed by Dr. Arthur D. Anastopoulos. 95 pp.

Despite prior research indicating Parent Training (PT) is an efficacious treatment for children with Attention-Deficit Hyperactivity Disorder (AD/HD), few conclusions can be made about the efficacy given the inconsistent manner in which PT programs have been implemented. Also remaining unclear is whether reported clinical improvements are due to altered parenting styles or other factors targeted by PT programs. In response to this situation, the current study conducted a therapeutic component analysis to determine whether a complete PT program, which included contingency management and AD/HD counseling (Anastopoulos & Barkley, 1990), was superior to a didactic-attention control (D-AC) group, which only taught AD/HD counseling. A total of 126 clinic-referred children with ADHD, between 6 and 11 years of age, and their parent(s) participated. Although increases in knowledge of AD/HD and contingency management were reported as predicted, differences in treatment effectiveness across the two groups did not emerge as anticipated; both groups experienced improvements related to child, parent, and family functioning. However, treatment-related group differences were evident with respect to child emotional functioning suggesting PT was superior to the D-AC group. These findings were examined in terms of their clinical significance using methodology by Jacobson and Truax (1991). Findings indicate that treatment aimed at increasing knowledge of AD/HD, which is rarely integrated into behavioral treatments, may enhance existing treatments.

EFFICACY OF PARENT TRAINING FOR CHILDREN WITH ATTENTION-
DEFICIT/HYPERACTIVITY DISORDER: A THERAPEUTIC
COMPONENT ANALYSIS

by

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A Thesis Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Greensboro
2007

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CHAPTER I

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (AD/HD) is a chronic and pervasive behavioral disorder with a prevalence rate of approximately 3% to 6% of children within the United States (American Psychiatric Association, 1994). Children with AD/HD demonstrate developmentally deviant symptoms of inattention, impulsivity, and hyperactivity. In addition to the primary symptoms associated with AD/HD, children with AD/HD are also at increased risk for having learning disorders (August & Garfinkel, 1990; Barkley, 2006; Frick et al., 1991) and other comorbid conditions, with as many as 40% also having Oppositional-Defiant Disorder (ODD) and 20-30% developing Conduct Disorder (CD). Children with comorbid externalizing disorders may also be at an increased risk for internalizing problems such as anxiety or depression (August, Realmuto, MacDonald, Nugent, & Crosby, 1996) and other emotional problems (Jensen, Martin, & Cantwell, 1997).

In combination with these comorbid symptoms, AD/HD creates psychosocial difficulties in several domains (Barkley, 2006; Weiss & Hechtman, 1986). For example, anywhere from 18-53% of children with AD/HD are academic underachievers (Barkley, 2006; Frick et al., 1991). In addition to causing academic impairment, AD/HD symptoms are often associated with social skill deficits and peer rejection (Cousins & Weiss, 1993; Frankel, Myatt, Cantwell, & Feinberg, 1997; Pelham & Bender, 1982).

AD/HD negatively affects the family system as well (Barkley 2006; 1997). This occurs because the child with AD/HD is not an isolated entity, but interacts with other members within the family system. As proposed by family systems theory (Ackerman, 1984), the behavior of each family member affects and is affected by all of the other members in the unit. Thus, having a child with AD/HD places the entire family at heightened risk of experiencing negative outcomes. In support of this contention, families of children with AD/HD display faulty communications styles, increased rates of parent-child, marital, and sibling conflict, as well as higher levels of parenting and sibling stress and lower parenting competence ratings (Barkley 2006; 1997; Lewis-Abney, 1993; Mash & Johnston, 1990; Pelham, et al., 1997).

In terms of parenting style, parents of children with AD/HD often adopt an overly directive and negative style of parenting (Cunningham & Barkley, 1979), which is related to higher rates of child defiance, noncompliance, and demands for attention (Campbell, March, Pierce, Ewing, & Szumowski, 1991; Danforth, Barkley, & Stokes, 1991). Similarly, these parents also report that they are less skilled in their parenting knowledge than they actually are (Mash & Johnston, 1990). Thus, parents of children with AD/HD describe their social life and parenting role as more negative than do control families (Donenberg & Baker, 1993; Lewis-Abney, 1993) and consistently endorse higher levels of parenting stress (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992).

Within AD/HD families, the marital relationship may be affected as well, with couples reporting increased marital conflict and maternal depression related to the marriage (Befera & Barkley, 1984; Cunningham, Benness, & Siegel, 1988). Although

not proven empirically, this raises the possibility that AD/HD impacts the affected child and his or her parents in a reciprocal manner. Limited research also suggests that AD/HD may negatively impact sibling relationships, with hyperactive sibling pairs demonstrating higher rates of sibling conflict than controls (Mash and Johnson, 1983).

Because AD/HD is associated with significant impairment across multiple psychosocial domains, a multi-modal intervention approach is suggested in which several treatments are implemented concurrently (MTA Cooperative Group, 1999). Among the many treatment options that exist, those that have received some empirical support include medication management, parent training (PT) involving contingency management, parent counseling, classroom modification and use of contingency systems, and cognitive-behavioral therapy (Pelham, Weeler, & Chronis, 1998). These interventions aim at providing temporary relief of symptoms associated with AD/HD; however, when treatment is discontinued, symptoms revert to baseline levels.

Research from the Multimodal Treatment Study of Children with ADHD (MTA), a randomized clinical trial of treatments for AD/HD, provides information on the efficacy and duration of various treatment packages. Participants, aged 7 to 9.9 years who carried a diagnosis of AD/HD Combined Type, were randomly assigned to one of four interventions lasting 14-months. Groups included medication management (titration and monitoring), intensive psychosocial treatment (PT, school-based, and social skills training interventions), a combined treatment (medication and intensive psychosocial interventions), and community care. All four groups demonstrated significant AD/HD symptom reduction, but the combined and medication management groups were

statistically superior to the intensive psychosocial treatment and community care groups. Although the combined condition was not superior to medication alone when assessing AD/HD symptom reduction, children receiving intensive psychosocial treatment required lower doses of medication than those in the medication management group (MTA Cooperative Group, 1999), thus highlighting the importance of psychosocial treatments.

In addition to requiring lower doses of medication, findings indicated that parents in the intensive psychosocial and combined treatment groups endorsed higher treatment satisfaction, implying that the behavioral component may lead to changes within the family system. Thus, it is important to look beyond symptom reduction to determine treatment efficacy. Secondary analyses corroborate that the success of a psychosocial treatment varies according to the type and context of the outcome assessed and suggest that when aspects of functional impairment are assessed, including family functioning, the intensive psychosocial intervention and combined groups were superior to medication management alone (Jensen et al., 2001; Pelham, 1999; Swanson et al., 2002).

Because PT is the only home-based component of the MTA's psychosocial treatment package, it likely is responsible for many of the reported improvements in family functioning. Support for this contention comes from studies that have examined PT alone. For example, PT has been shown to be efficacious in diminishing disruptive behaviors (Corkum, McKinnon, & Mullane, 2005; Kazdin, 1997; Sonuga-Barke, Daley, Thompson, Laver-Bradbury, & Weeks, 2001; Webster-Stratton & Hammond, 1997; Webster-Stratton & Reid, 2003) as well as increasing prosocial behaviors within the home (Reid, Webster-Stratton, & Baydar, 2004). PT has also been associated with a

decrease in behavioral problems associated with AD/HD and comorbid conditions (Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004; Danforth, Harvey, Ulaszek, & McKee, 2006; Pelham, et al., 1998). PT may also be effective in preventing or reducing comorbid ODD and CD symptoms (Sonuga-Barke, Daley, & Thompson, 2002), which are believed to be due in part to environmental factors such as coercive parenting, parental psychopathology, and family stress (Patterson, 2002; 1982).

In addition to improving child behavioral variables, PT programs have also addressed parenting outcomes such as parenting stress and parenting self-esteem (Anastopoulos, et al., 1993; Danforth, et al., 2006; Sonuga-Barke, et al., 2001; Treachy, Tripp, & Baird, 2005; Weinberg, 1999). Following PT, mothers demonstrated improved parenting behaviors (Danforth, et al., 2006; Treachy, et al., 2005; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2001) such as a decrease in maternal critical remarks, negative commands, and harsh discipline strategies (Webster-Stratton, 1998). In addition, PT is also associated with increased reports of maternal subjective well being (Sonuga-Barke, et al., 2001) and parenting competencies (Webster-Stratton, 1998). This may be due in part to an increase in parental knowledge of AD/HD (Weinberg, 1999) and comorbid diagnoses (Hartman, Stage, & Webster-Stratton, 2003). Taken together, upon completing PT, parents are more confident in their ability as caregivers, given their increased knowledge of AD/HD and contingency management, which may lead to improvements within the entire family system.

Although encouraging, such conclusions about PT must be tempered by a consideration of numerous limitations in the AD/HD PT literature, including the

inconsistent manner in which PT programs are designed and implemented (Newby, Fischer, & Roman, 1991). Although there is some consistency in the type of PT used, with the majority of PT programs adopting manuals written by Barkley (1997), Forehand and McMahon (1981), and Patterson (1982), the underlying goals of each program differ. For example, therapeutic goals include: reducing child non-compliance (Barkley, 1997), identifying and correcting coercive styles of parenting (Patterson, 1982), and exploring child misbehavior in vivo through modeling effective commands (Forehand & McMahon, 1981). Although some PT programs include knowledge about child misbehavior, (e.g. Barkley, 1997), few integrate a knowledge component to discuss features associated with AD/HD (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Treachy, et al., 2005; Weinberg, 1999). In addition, most PT programs include systems for both positive reinforcement and punishment; however, the ordering of treatment components differs, with some programs emphasizing positive reinforcement in the earlier sessions (Barkley, 1997), while others first introduce punishment procedures (Forehand & McMahon, 1981).

Not only does the content differ between programs, but so too does the format. For example, some approaches such as those outlined by Patterson (1982) and Forehand and McMahon (1981) are typically delivered within individual therapy. In contrast, Barkley's Defiant Child Program (1997) can be administered either individually or in a group setting. The average number of treatment sessions tends to vary, with Patterson's approach being more short-term, typically consisting of five or more sessions, as compared to the other programs which require a minimum of eight to ten sessions. Most

programs are designed for preschool-aged children up to elementary aged or preadolescents.

In addition to variation in content and format, PT studies also differ in the way clinical improvement is operationally defined, sometimes examining child behaviors such as symptom reduction (e.g. Corkum, et al., 2005), parental change (e.g. Treacy, et al., 2005), or a combination of child and parent variables (e.g. Anastopoulos, et al., 1993). In addition to which outcomes are chosen, many studies only use a pre-post design (e.g. Danforth, et al., 2006). Among the few studies that include follow-up information, data is typically obtained within three months of active treatment (e.g. Anastopoulos, et al., 1993; Sonuga-Barke, et al., 2001) and even fewer include follow-up data past six months (Treacy, et al., 2005). Thus, little is known about the maintenance effects of PT.

Confounding treatment variables also make interpretation of outcome difficult. For example, most PT studies do not monitor medication status (e.g. Danforth et al., 2006). Others require participants taking medication to continue their same regimen throughout the duration of the study (e.g. Treacy et al., 2005). Of the studies that monitor medication management, many do not control for this statistically. Thus, it remains unclear whether treatment effects are caused by psychosocial intervention, medication, or the interaction.

Studies also do not control for parental variables when looking at treatment outcome for PT. For example, Sonuga-Barke and colleagues (2002) found mothers who also experienced high levels of AD/HD symptoms did not demonstrate the same improvements following PT as compared to control families. Although little is known

about how maternal variables impact treatment, even less is known about the role of fathers. Thus, parenting variables are equally important as child variables when assessing the effectiveness of PT.

Inconsistent diagnostic criteria also make it difficult to draw conclusions. Few studies use strict DSM criteria, multiple informants, and data obtained across situations, to ensure functional impairment across settings (e.g. Corkum, et al., 2005). Thus, the variability in sample recruitment yields inconsistent findings across studies.

Compounded with the lack of consensus regarding diagnostic procedures, there is also inconsistency regarding how comorbidity is assessed and monitored, with most studies not assessing for secondary psychiatric conditions (e.g. Treacy, et al., 2005). Among studies that do report comorbidity, few use a pure sample consisting only of children with AD/HD and ODD (e.g. Danforth, et al., 2006). In addition, secondary diagnoses are often unclear and based on a single subscale from a broadband measure (e.g. McKee, Harvey, Danforth, Ulaszek, & Friedman, 2004). Thus, few studies report comorbidity and even fewer control for comorbidity experimentally and statistically (e.g. Anastopoulos, et al., 1993). In a similar vein, subtyping is not addressed consistently, with some studies using a pure sample consisting of only one subtype, (e.g. Danforth, et al., 2006), whereas others combine all subtypes (e.g. Pfiffner, McBurnett, Rathouz, & Judice, 2005), or do not document subtyping.

Sample sizes are also consistently problematic as is the unequal distribution of males and females, with male participants predominating. Few studies represent males and females equally (e.g. Pfiffner, et al., 2005) and many do not specify gender

composition (e.g. Corkum, et al., 2005). In terms of sample recruitment, most studies rely on clinical data (e.g. Danforth, et al., 2006), but some, especially those involving younger children, use community samples (e.g. McKee, et al., 2004).

Taken together, the variability in which PT programs are designed and implemented makes it difficult to compare results across studies and several questions remain. For example, are clinical improvements due to specific components or an entire treatment package? If the specificity of treatment components is important, are treatment effects due to an increase in parent knowledge of AD/HD, contingency management, or the interaction? This is important given the majority of PT programs emphasize a behavioral approach only, despite knowledge of AD/HD being related to positive outcomes such as decreased parenting stress and improved parenting style (Treachy, et al., 2005).

Thus, the current study conducted a therapeutic component analysis to determine whether a complete PT program, which included contingency management and AD/HD counseling following a cognitive-behavioral approach (Anastopoulos & Barkley, 1990), was superior to AD/HD counseling alone. In addition, clinical improvement was investigated from a family systems perspective, which examined differences in child, parent, and family outcomes as a function of specific treatment components. It was hypothesized that the complete PT program would be superior and lead to clinical improvement in child, parent, and family variables. In contrast, due to the lack of contingency management, the AD/HD counseling group was expected only to improve with respect to parent variables.

Avoiding the methodological limitations inherent in prior research, the current study followed a manualized treatment approach, individually administered to mothers and fathers. Measurement of clinical improvement was expanded to include child, parent, and family variables, and maintenance effects were examined at a six-month follow-up. In addition, the study followed stringent diagnostic criteria and disentangled confounding treatments by prohibiting medication management during the active phase of treatment. Children were allowed to begin medication during the six-month follow-up. Other confounding variables, including child comorbidity and parental psychopathology, were assessed and controlled for through the design as well as statistically. Lastly, the study included a gender composition commensurate with that found in clinical samples.

CHAPTER II

METHOD

Participants

The current study analyzed data collected from the *Comorbidity and ADHD Parent Training Outcome* grant, NIMH # 46515-01A1, completed by Dr. Anastopoulos while at the University of Massachusetts Medical Center. The primary purpose of the study was to examine child and parent variables associated with parent training outcome. Of secondary interest was investigating which treatment components were most efficacious. Although the original sample consisted of a total of 138 clinic-referred children with ADHD (104 boys, 34 girls) and their parents (137 mothers, 96 fathers), a subset of participants was selected for the current study using a total of 126 children (92 boys, 34 girls) and their parents (125 mothers, 91 fathers). All children were between 6 and 11 years of age, with an average age of 8.5 years, and met DSM-III-R criteria for ADHD. In order to receive a diagnosis of ADHD, children had to meet DSM-III-R criteria as determined by caregiver responses to the Diagnostic Interview Schedule for Children-Parent Version (DISC; Costello, 1987) accompanied by T-scores of 65 or above on the Attention Problems scale of the Child Behavior Checklist (CBCL; Achenbach, 1991). In addition, 44% of the recruited children also met diagnostic criteria for ODD according to maternal report on the DISC, along with T-scores of 65 or above on the

Aggression scale of the CBCL. The DISC was also used to ensure that all children were free of clinically significant affective and anxiety disorders. In addition, child participants had to be of at least low-average intelligence, biologically related to the parent or adopted prior to one year of age, free of any major developmental disability, affective, and anxiety disorders, and willing to refrain from pharmacological treatment during the active phase of the study. Participants were also selected according to parental psychopathology and were categorized as having either low or high levels according to the Symptoms Checklist 90-Revised (SCL-90-R; Derogatis, 1983). Efforts were made to recruit participants from diverse socio-economic and ethnic backgrounds commensurate with that found in the surrounding community, but most were Caucasian (93%) and from two-parent (68%), middle-class backgrounds.

Families were randomly assigned to either a PT program (Anastopoulos & Barkley, 1990), which is a modified version of Barkley's PT program (Barkley, 1987) or to a didactic-attention control (D-AC) group, which received AD/HD counseling similar to the PT group, but no specialized training in contingency management. Because the primary purpose of the original study was not to conduct a therapeutic component analysis, this resulted in unequal sample sizes between the two groups. Groups consisted of 114 participants enrolled in PT (86 boys, 28 girls) and 24 in the D-AC condition (18 boys, 6 girls). The selected sample was comprised of the total participants from the D-AC group, but was limited to 102 participants enrolled in PT (74 boys, 28 girls).

Independent Measures

Diagnostic Interview Schedule for Children - Parent Version (DISC; Costello, 1987)

The DISC is a psychometrically sound structured diagnostic interview that assesses DSM-III-R diagnoses via a yes/no response format. It was used to establish diagnoses of ADHD and ODD and to rule out exclusionary comorbid conditions.

Child Behavior Checklist - Parent Version (CBCL; Achenbach, 1991)

The CBCL is a 113-item questionnaire that is completed by the child's parent to assess child competencies and psychiatric symptoms within children ages 4-18. The measure demonstrates high test-retest reliability within the Attention ($r = .90$) and Aggression ($r = .91$) domains. The Attention and Aggression dimension scores were used to assess the developmental deviance of ADHD and ODD symptoms, respectively. Developmental deviance was defined as T-scores at or above 65.

Wechsler Intelligence Scale for Children - Third Edition (WISC-III; Wechsler, 1991)

The WISC-III is a psychometrically sound test of intellectual performance. The Full Scale Estimate was used to rule out any developmental delays and to control for intelligence differences across groups.

Symptom Checklist 90 - Revised (SCL-90-R; Derogatis, 1983)

The SCL-90-R is a self-report questionnaire that measures adult psychopathology. Items are on a 5-point Likert scale with responses ranging from 0 (not at all) to 5 (extremely). The measure yields nine primary symptom dimensions (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism) and three global domains of distress

(Global Severity, Positive Symptom Total, and Positive Symptom Distress Index). The measure demonstrates high internal consistency ($\alpha = .77 - .90$) across domains as well as high test-retest reliability ($r = .78 - .90$); (Derogatis, 1983). T-scores that exceed 63 in any of the nine dimensions indicate psychopathology. The Global Severity Score was used to categorize mothers as either low ($T \leq 58$) or high ($T \geq 63$) in parental psychopathology.

Adult ADHD Rating Scale (AADHD-RS; DuPaul 1991, unpublished manuscript)

The ADHD-RS is a self-report questionnaire that addresses the severity of the 14 symptoms of ADHD as outlined by DSM III-R criteria, with responses falling on a Likert scale from 0 (not at all) to 3 (very much). Although estimates of reliability are not available using a normative sample, the measure is frequently used in clinical research. The total score was used to assess overall levels of ADHD among parents.

Dependent Measures

Checks on Experimental Manipulation

Test of ADHD Knowledge (TOAK; Anastopoulos, 1992). The TOAK is a 22-item multiple choice test of parental knowledge of AD/HD. The total number of correct answers was used to assess changes in parental knowledge of the disorder and its associated features. The TOAK demonstrates high test-retest reliability ($r = .85$).

Knowledge of Behavioral Principles as Applied to Children (KBPAC; O'Dell, Tarler-Benlolo, & Flynn, 1979). The KBPAC is a 50-item, multiple choice questionnaire with adequate psychometric properties. The measure demonstrates high internal ($\alpha = .94$)

and test-retest reliability ($r = .87$). The total number of correct answers on a modified 20-item version was used to assess changes in knowledge of contingency management.

Parenting Scale (PS; Arnold, O’Leary, Wolff, & Acker, 1993). The PS is a 30-item questionnaire that measures parental discipline and yields three factors, over-reactivity, laxness, and verbosity, as well as a total score. Parents rate the frequency that they use specific discipline strategies using a 7-point Likert scale ranging from a 1 (frequent use of an effective strategy) to 7 (frequent use of an ineffective strategy). The PS demonstrates adequate internal consistency across the over-reactivity ($\alpha = .83$), laxness ($\alpha = .81$), and verbosity domains ($\alpha = .67$), as well as the total composite score ($\alpha = .85$). In addition, the measure yields adequate test-retest reliability for the over-reactivity ($r = .82$), laxness ($r = .83$), and verbosity ($r = .78$) domains, as well as the total composite ($r = .84$). The total composite score was used to measure self-reported changes in discipline strategies.

Parent Perception Inventory (PPI; Hazzard, Christensen, & Margolin, 1983). The PPI is an 18-item questionnaire that assesses children’s perceptions of their parent’s parenting practices and yields positive and negative behavior subscales. Children respond according to a 5-point Likert scale ranging from “never” to “a lot.” A total score is calculated as the sum of the responses. The measure yields adequate reliability for mothers ($\alpha = .84$, $\alpha = .78$) and fathers ($\alpha = .88$, $\alpha = .80$) for both the positive and negative behavior subscales, respectively. The total score was used to assess children’s perception of changes in parenting style.

Impact on Child Functioning

ADHD Rating Scale - Home Version (ADHD-RS; DuPaul, 1991). The ADHD-RS addresses the severity of the 14 symptoms of ADHD as outlined by DSM III-R criteria, with responses falling on a Likert scale from 0 to 3. Internal consistency for the inattention ($\alpha = .93$), impulsivity ($\alpha = .90$), and total domains ($\alpha = .94$) are high. In addition, the measure demonstrates excellent test-retest reliability for the inattention ($r = .94$), impulsivity ($r = .90$), and total domains ($r = .94$). The total domain score was used to assess changes in AD/HD symptom severity at home.

Oppositional Defiant Disorder Rating Scale - Home Version (ODD-RS; Anastopoulos, unpublished manuscript, 1991). The ODD-RS measures the severity of the nine symptoms of ODD as outlined by the DSM-III-R criteria with responses falling on a Likert scale from 0 (never or rarely) to 3 (very often). The measure yields adequate test-retest reliability for the total domain ($r = .80$). The ODD-RS was used to assess changes in ODD symptom severity at home.

Child Behavior Checklist - Parent Version (CBCL; Achenbach, 1991). The Internalizing composite score was used to measure changes in child emotional functioning at home and demonstrates high test-retest reliability ($r = .89$).

Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a 27-item self-report measure that is modeled after the adult version. The measure assesses child self-reported depressive symptoms according to cognitions, affect, somatic complaints, and behavioral effects. Responses range from 0 (not present) to 2 (severe). The CDI yields a total score and five subscale scores including negative mood, interpersonal

problems, ineffectiveness, anhedonia, and negative self-esteem. The CDI demonstrates adequate reliability among community samples ($\alpha = .71 - .89$) as well as psychiatric referrals ($\alpha = .86$); (Kovacs, 1983). In addition, test-retest reliability is adequate ($r = .55$). The total composite score was used to assess self-reported changes in child mood.

Child Self-Esteem Inventory (C-SEI; Coopersmith, 1967). The C-SEI is a 58-item child self-report questionnaire that assesses overall self-esteem as well as self-esteem within the personal, family, academic, and social domains. Children are asked to respond to a series of descriptions and rate whether they are “like” or “unlike” them. The C-SEI demonstrates adequate internal consistency ($\alpha = .79$); (Kokenes, 1974; 1978) and test-retest reliability ($r = .78$). The total score, calculated as the sum of ratings, was used to assess changes in child self-esteem.

Impact on Parent Functioning

Parenting Stress Index - (PSI; Abidin, 1990). The PSI is a 120-item self-report questionnaire that examines stress related to child rearing and parenting practices using a 5-point Likert scale ranging from 1 “strongly agree” to 5 “strongly disagree.” The measure yields a Total Stress score, as well as Child and Parent Domain scores. The measure demonstrates excellent internal reliability ($\alpha = .95$) and adequate test-retest reliability ($r = .76$). The Total Stress score was used to examine overall changes in parenting stress.

Beck Depression Inventory (BDI; Beck, 1978). The BDI is a 21-item self-report questionnaire that assesses adult depression. The measure demonstrates adequate reliability for populations comprised of individuals with mixed depression ($\alpha = .86$) and

major depression ($\alpha = .80$). In addition, the BDI demonstrates adequate test-retest reliability ($r = .72$). The total composite score was used to assess changes in self-reported parental mood.

Parenting Sense of Competence Scale (PSOC; Johnston & Mash, 1989). The PSOC is a self-report questionnaire that asks parents to respond to 16 statements on a 6-point Likert scale ranging from “strongly agree” to “strongly disagree.” The measure yields a total score and indices of parenting satisfaction and efficacy. The PSOC demonstrates adequate internal consistency for the satisfaction ($\alpha = .75$) and efficacy ($\alpha = .76$) domains, as well as the total composite ($\alpha = .79$); (Gibaud-Wallston & Wandersman, 1978). The measure also has adequate test-retest reliability ($r = .59$). The total composite score was used to examine changes in parenting according to treatment.

Impact on Family Functioning

Parenting Alliance Inventory (PAI; Abidin & Brunner, 1995). The PAI is a 20-item questionnaire that measures parents’ perceptions of how consistent they are with their partner’s parenting practices. Responses fall on a 5-point Likert scale ranging from a 1 (strongly disagree) to 5 (strongly agree). The measure demonstrates high internal consistency ($\alpha = .96$). Follow-up studies have calculated reliability coefficients for mothers ($\alpha = .81 - .91$) and fathers ($\alpha = .75 - .87$) separately (McBride & Rane, 1998). The PAI demonstrates adequate test-retest reliability ($r = .80$). The total composite score was used to assess changes in perceived parenting consistency.

Locke-Wallace Marital Adjustment Scale - Short Form (LWMAS-SF; Locke, 1951). The LWMAS-SF is a 23-item self-report questionnaire that assesses marital

satisfaction. Twelve of the items follow a multiple choice format with a response-set of frequently, occasionally, and rarely. Nine items assess the participant's level of agreement on marital issues using a six-point Likert scale ranging from "always agree" to "always disagree." One question, labeled "serious difficulties" lists 22 domains that may place strain on the relationship. The last item asks the participant to rate their general degree of happiness in the marriage on a 7-point Likert scale from "very unhappy" to "very happy." The measure demonstrates adequate test-retest reliability for mothers ($r = .78, .72$) and fathers ($r = .69, .77$) for factors one and two, respectively, with an overall high test-reliability ($r = .85$). The total composite score was used to determine changes in marital quality.

Treatment

A summary of the two treatment programs appears in Table 1. The PT program (Anastopoulos & Barkley, 1990) is a modified version of Barkley's model (Barkley, 1987). Sessions 1 and 2 provide an overview of AD/HD, including a discussion of its history, primary symptoms, prevalence, comorbidity, etiology, situational variation, assessment, and treatment. In addition, a 4-factor model for understanding child behavior problems and general contingency management principles are presented. Sessions 3 and 4 introduce specific techniques including positive attending and ignoring skills, non-directive and non-corrective methods of play, and effective commands. Sessions 5 and 6 provide supervised instruction in setting up comprehensive, reward-oriented home token economy and response cost systems. Sessions 7 and 8 provide discipline techniques including time-out for more serious rule violations and strategies to manage child

behavior problems that occur in public places. Session 9 addresses ways to promote collaboration with school personnel. The final session is used to review and refine the program as needed.

The D-AC condition was created by the Principal Investigator to increase parental knowledge of AD/HD without the inclusion of contingency management. Sessions 1 and 2 provide the same overview of AD/HD as in the PT condition. Session 3 addresses the benefits and risks of medication. Session 4 presents the same 4-factor model for understanding child behavior problems as is used in PT. Sessions 5 through 8 discuss how AD/HD impairs daily functioning as related to family, peers, child self-esteem and emotional functioning, and academic performance. Session 9 addresses school placement issues and children's rights under state and federal special education laws. The final session reviews the program as needed.

Project Staff

The project staff consisted of five project therapists, three male and two female. Three of the individuals were licensed psychologists and two were post-doctoral level therapists. All were knowledgeable in the assessment and treatment of children with behavioral problems and were recruited, trained, and supervised by the Principal Investigator and other senior staff. Therapists were blind to participant status regarding whether the child carried a diagnosis of ODD and the level of parental psychopathology. A research assistant who held a master's degree in a psychology related field was responsible for collecting and scoring the rating scales and reviewing audiotapes. In

addition to being unaware of child ODD status and level of parent psychopathology, the RA was blind to treatment status.

Adherence

Several steps were taken to ensure each condition was delivered as prescribed. All therapists followed manualized session outlines. In addition, all treatment sessions were audiotaped and 20% were randomly selected and reviewed by the Principal Investigator to ensure adherence. Adherence ratings were completed to assess whether the topics were delivered according to the session outlines. A 5-point Likert scale was developed in order to rate the percentage of topics covered, which ranged from a 5 (100%) down to a 1 (less than 70%). Project psychologists also completed weekly self-ratings to determine whether they adhered to procedures.

Procedure

Participants were recruited through the ADHD Clinic at the University of Massachusetts Medical Center in Worcester, MA. The recruitment process began when the referral source contacted the clinic secretary. Following the initial telephone intake, the secretary sent a packet of rating scales to the child's parent(s) and teachers. Upon receipt and scoring of the measures, the child underwent standardized AD/HD clinic testing, which included parent and child diagnostic interviews, direct child testing on measures of sustained attention and cognitive impulsivity, teacher behavior rating scales, and a review of school and medical data. Intelligence testing was conducted for children who had not received formal testing within a year. Of the 255 children who were evaluated, 138 were eligible to participate. Families that met all criteria were informed of

their eligibility and then consented to participate in the study. Following consent they were scheduled within a month for pretreatment assessment with a research assistant who was blind to group assignment. The assessment included observations of mother-child interactions during structured tasks, parent and child completed self-report questionnaires, and child behavior rating scales. Active treatment began within two weeks of the assessment. Following the active phase of treatment, families first completed a post-treatment assessment within two weeks and then a six-month follow-up evaluation, consisting of the same battery as pretreatment.

During active treatment, parents received either the PT or D-AC condition. Both programs were implemented by a Ph.D. level psychologist and conducted individually during an hourly session over a ten-week period. All participants assigned to the D-AC condition were given the opportunity to enroll in a PT program, either at the AD/HD clinic or another mental health facility, following completion of the study. Medication management was prohibited during the active phase of treatment, but was allowed to resume during the six-month follow-up.

Participant Compensation

For participating in the study, each family was given thirty dollars per assessment including pre-treatment, post-treatment, and follow-up. Teachers were given ten dollars per assessment for completing child behavior ratings.

CHAPTER III

RESULTS

Preliminary Analyses

Preliminary analyses were conducted to examine whether scores deviated from a normal distribution, defined as skewness values that exceeded 1.5 (Lomax, 2001). All values were normally distributed with the exception of the pretreatment number of AD/HD symptoms rated as a two or three by mothers, as well as the pretreatment total score on the Child Depression Inventory. Following square root transformation, both variables fit a normal distribution.

Pretreatment Comparability of Comparison Groups

Pretreatment comparability of the PT and D-AC groups was examined by conducting a series of Chi Square and t-test analyses. Non-significant findings emerged for all measures with the exception of the SCL-90-R General Severity and BDI scores as reported by mothers at pretreatment. Although the original design called for an equal number of participants with low and high levels of parental psychopathology across groups as defined by scores on the SCL-90-R, this was not accomplished due to unforeseen circumstances. Thus, dropping 12 participants from the PT group from further analyses was chosen instead of conducting an analysis of covariance (ANCOVA) to control statistically for group differences in parental psychopathology. The resulting subset of participants (n = 126) yielded non-significant findings between groups on these

and all other dependent measures. Both groups were also statistically equivalent with respect to pretreatment CBCL Attention and Aggression subscale scores, comorbid diagnostic status, age, grade, race, gender, family intactness, family size, mothers' and fathers' socioeconomic status, grade retention, and special education services. Thus, the two groups were statistically equivalent prior to treatment.

Attrition Rates

Over the course of treatment, 14 families from the PT group did not complete the nine session program, resulting in a 14% drop-out rate. Within the D-AC group, a total of four families discontinued the program, representing a 17% drop out rate. χ^2 analyses revealed that the differences in drop-out rates between the groups were not significant. Additionally, there were comparable drop-out rates between the groups between post-treatment and follow-up, with 15% of participants from both groups not completing the project. Thus, differences in drop-out rates between the groups were not significant at all time points.

Medication Status During Follow-up Period

Following active treatment, participants were allowed to begin medication management, which resulted in 24 children (32%) in the PT group and 7 children (37%) in the D-AC group taking medication between post-treatment and follow-up. χ^2 analyses revealed that the differences in medication use between the groups were not significant.

Data Analytic Plan

A series of 2 (Group) x 3 (Time Periods) repeated measures Analyses of Variance (ANOVA) were conducted for each outcome variable, separately for mothers and fathers.

For all significant interactions, between subjects differences at each time point were assessed via independent samples t-tests; paired sampled t-tests were used to assess within subject changes by group. LSD post-hoc tests were performed to allow for pairwise comparisons for all significant within subjects main effects.

Checks on Experimental Manipulation

The means and standard deviations for all measures related to experimental manipulation checks as reported by participants in the PT and D-AC groups appear in Tables 2 through 5.

As predicted, the results for ADHD knowledge (TOAK) revealed a significant main effect for time for mothers, $F(2, 91) = 48.70, p < .001$, and fathers, $F(2, 34) = 33.56, p < .001$, but did not show a significant interaction effect for either parent. Thus, mothers' and fathers' knowledge of AD/HD improved over time for both groups, but did not differ significantly across the PT and D-AC groups. Post-hoc comparisons yielded significant time effects between pre and post-treatment ($p < .001$) and from pre-treatment to follow-up ($p < .001$) assessments, suggesting an increase in knowledge during active treatment that was maintained over time. Thus, as anticipated, knowledge of AD/HD increased for mothers and fathers in both groups across time, but did not differ significantly according to group status.

Also consistent with predictions, the results for mothers' knowledge of contingency management (KBPAK) revealed a significant interaction effect, $F(2, 91) = 3.95, p < .05$. Independent samples t-tests demonstrated significant differences between groups at post-treatment, $t(92) = 2.78, p < .01$ and follow-up, $t(92) = 4.32, p < .001$.

Significantly higher levels of contingency management knowledge were evident between pre and post-treatment for both the PT, $t(74) = -10.63, p < .001$, and D-AC groups, $t(18) = -5.35, p < .001$ and from post to follow-up for the PT group, $t(74) = -2.89, p = .005$. Thus, mothers' knowledge of contingency management improved over time for both groups, but the degree of change was significantly higher for mothers in the PT group. In contrast, the results for fathers revealed a significant main effect for time only, $F(2, 33) = 26.73, p < .001$. Post-hoc comparisons yielded significant time effects between pre and post-treatment ($p < .001$) and from pre-treatment to follow-up ($p < .001$). Thus, fathers' knowledge of contingency management improved over time, but did not differ significantly across the PT and D-AC groups.

Significant interaction effects were also found for self-reported parenting strategies (PS) for mothers, $F(2, 90) = 6.92, p < .005$ and fathers, $F(2, 48) = 4.12, p < .05$. Independent samples t-tests showed significant differences between groups at post-treatment for both mothers, $t(91) = -2.69, p < .01$ and fathers, $t(49) = -2.13, p < .05$. Thus, directly following active treatment, the PT group reported significantly higher levels of effective parenting strategies than did parents in the D-AC group. This effect did not remain significant at follow-up.

Lastly, although there was a significant time effect for childrens' parenting perceptions of their fathers (PPI), $F(2, 73) = 3.69, p < .05$, indicating that children in both groups endorsed more positive parenting perceptions of their fathers over time, there was a non-significant time effect for mothers, $F(2, 92) = 1.02, p > .05$. Post-hoc

comparisons yielded significant time effects for perceptions of fathers between post-treatment and follow-up ($p < .05$) as well as from pre-treatment to follow-up ($p < .05$).

Changes in Child Functioning

The means and standard deviations for all measures related to child functioning as reported by participants in the PT and D-AC groups appear in Tables 6 through 10.

There were no significant interaction effects for either parent in terms of child ADHD or ODD symptoms. Significant main effects were found for severity of ADHD symptoms (ADHD-RS) as reported by mothers, $F(2, 88) = 24.10$, $p < .001$ and fathers, $F(2, 51) = 5.31$, $p < .01$, indicating symptom reduction for both groups. For mothers, post-hoc comparisons yielded significant time effects between all time points ($p < .01$), whereas for fathers, there were significant differences only between pre and post-treatment ($p < .05$) and from pre-treatment to follow-up ($p < .01$). In terms of severity of Oppositional Defiant Disorder symptoms (ODD-RS), there was a main effect for mothers, $F(2, 90) = 9.82$, $p < .001$, but not for fathers, suggesting mother endorsed symptom reductions for both groups. Post-hoc comparisons indicated significant time effects between pre and post-treatment ($p = .001$) and pre-treatment to follow-up ($p < .001$). In contrast with these behavioral outcomes, a significant interaction effect was found for parent reported child emotional functioning (CBCL-Internalizing Composite) as reported by fathers, $F(2, 50) = 5.75$, $p = .005$, but not mothers, indicating that fathers in the PT group endorsed a significant improvement in child emotional functioning, whereas fathers in the D-AC reported a deterioration in functioning. Post-hoc comparisons yielded non-significant time effects between all assessments; however,

independent samples t-tests demonstrated significant differences between groups at follow-up, $t(51) = -2.14, p < .05$. Thus, at follow-up, fathers in the PT group reported significantly better levels of child emotional functioning than did fathers in the D-AC group. There was a significant main effect for childrens' emotional functioning (CBCL) as reported by mothers, $F(2, 88) = 28.94, p < .001$, indicating parent reported improvement in child emotional functioning for both groups between pre and post-treatment ($p < .001$) and from pre-treatment to follow-up ($p < .001$).

A significant interaction effect was also found for childrens' self-reported self-esteem (C-SEI), $F(2, 92) = 3.16, p < .05$, indicating that children in both groups experienced an increase in self-esteem, but the degree of change differed according to group status. Although independent samples t-tests demonstrated non-significant differences between groups at all time points, post-hoc comparisons yielded significant time effects for both the PT, $t(75) = -3.25, p < .005$, and D-AC, $t(18) = -3.28, p < .005$, groups between pre-treatment and follow-up. In addition, a significant time effect for the D-AC group occurred from post-treatment to follow-up, $t(18) = -2.43, p < .05$. No significant interaction or main effects were found for childrens' self-reported depression (CDI), suggesting a lack of improvement for children in both groups.

Changes in Parent Functioning

The means and standard deviations for all measures related to parent functioning as reported by participants in the PT and D-AC groups appear in Tables 11 through 13.

Although no significant interactions were found with respect to parent variables, several significant main effects emerged. In terms of self-reported parenting stress (PSI),

mothers, $F(2, 88) = 5.56, p = .005$ and fathers, $F(2, 44) = 5.07, p = .010$, in both groups reported decreased levels of parenting stress across time. According to post-hoc comparisons, for mothers and fathers this time effect occurred from pre-treatment to follow-up ($p < .005$), whereas for mothers it also occurred from pre to post-treatment ($p < .015$). For fathers, an additional effect from post-treatment and follow-up ($p < .05$) was found, suggesting a decrease in parenting stress during treatment, which was maintained at follow-up.

Significant main effects were also found for parenting self-esteem (PSOC) for both mothers, $F(2, 90) = 30.08, p < .001$ and fathers, $F(2, 48) = 4.94, p < .015$, suggesting both groups reported an increase in perceived sense of competence. Post-hoc comparisons suggested that the significant time effects for mothers and fathers occurred between pre and post-treatment ($p < .005$) and from pre-treatment to follow-up ($p < .05$).

Lastly, in terms of parental depression (BDI), no significant interactions or main effects emerged for mothers or fathers.

Changes in Family Functioning

The means and standard deviations for all measures related to family functioning as reported by participants in the PT and D-AC groups appear in Tables 14 and 15.

In terms of family functioning variables, a significant interaction effect was found for marital satisfaction (LWMAS) as reported by fathers, $F(2, 38) = 4.52, p < .015$, whereas no significant interaction or main effect was found for mothers. Fathers in the D-AC endorsed significantly higher levels of marital satisfaction between pre-treatment to follow-up, $t(8) = -2.46, p < .05$, which accounts for the significant difference in

marital satisfaction between the PT and D-AC groups at follow-up, $t(39) = -2.39$, $p < .05$. There were no significant interactions with respect to parenting alliance (PAI); however, significant main effects emerged for mothers, $F(2, 77) = 3.70$, $p < .05$, and fathers, $F(2, 49) = 4.23$, $p < .05$, indicating improved parenting alliance for both groups. Significant time effects occurred between pre and post-treatment for mothers, ($p < .005$) and fathers, ($p < .01$), suggesting improved parenting alliance during active treatment.

Clinical Significance

Clinical significance was assessed using methods designed by Jacobson and Truax (1991). This method focuses on individual data and yields percentages of participants demonstrating no change or deterioration, minimal change, and reliable change. Reliable change assesses the degree of individual change that is more likely due to treatment effects rather than error. Clinical significance was examined separately for mothers and fathers at post-treatment and follow-up. Subsequent chi-square analyses were conducted to determine if the distributions of the 2 (Group) x 3 (Clinical Significance) matrices deviated from chance.

Checks on Experimental Manipulation

A summary of the percentages of participants in the PT and D-AC groups showing clinically significant changes for all measures related to experimental manipulation appears in Tables 16 through 21.

χ^2 analyses revealed a trend for ADHD knowledge (TOAK) for mothers at post-treatment, [$\chi^2(2) = 4.66$, $p = .10$] as well as follow-up, [$\chi^2(2) = 3.95$, $p = .14$]. Relatively larger numbers of mothers in the D-AC group demonstrated increases in their knowledge

of AD/HD. Significant findings emerged for knowledge of behavioral principles (KBPAC) for fathers at post-treatment, [$\chi^2(2) = 6.03, p = .05$], as well as for mothers at follow-up, [$\chi^2(2) = 9.43, p = .01$]; thus, indicating relatively larger numbers of participants in the PT group displaying increases in their knowledge of behavioral principles. In terms of self-reported parenting strategies (PS), analyses yielded significant findings for both mothers, [$\chi^2(2) = 15.65, p = .00$] and fathers, [$\chi^2(2) = 6.44, p = .04$] at post-treatment, in addition to an emerging trend displayed by mothers at follow-up, [$\chi^2(2) = 4.68, p = .10$]. These findings suggest a relatively larger number of participants in the PT group showing improvement in self-reported parenting strategies, whereas a larger number of participants in the D-AC group exhibited no change in parenting strategies or endorsed more ineffective strategies.

Changes in Child Functioning

A summary of the percentages of participants in the PT and D-AC groups showing clinically significant changes for all measures related to child functioning appears in Tables 22 through 31.

χ^2 analyses examining changes in child functioning yielded non-significant findings for mothers and fathers on all variables except for one variable for which a trend arose. This trend occurred from differences in the severity of ADHD symptoms (ADHD-RS), as endorsed by mothers at post-treatment [$\chi^2(2) = 3.87, p = .15$]. Relatively larger numbers of mothers in the PT group reported reductions in the severity of their child's ADHD symptoms.

Changes in Parent Functioning

A summary of the percentages of participants in the PT and D-AC groups showing clinically significant changes for all measures related to changes in parent functioning appears in Tables 32 through 37.

In terms of changes in parent functioning, χ^2 analyses yielded two additional trends related to parenting stress (PSI), [$\chi^2(2) = 4.34, p = .11$] and parental depression (BDI), [$\chi^2(2) = 5.78, p = .06$], as reported by mothers at post-treatment. Findings suggest that a larger number of mothers in the D-AC group demonstrated no change or increases in parenting stress and parental depression, as compared to mothers in the PT group. In addition to findings related to mothers, a single trend emerged for fathers related to parenting self-esteem (PSOC) at post-treatment [$\chi^2(2) = 4.05, p = .13$]. A larger number of fathers in the D-AC group endorsed no change or decreases in their parenting self-esteem. All other variables related to changes in parent functioning yielded non-significant findings for mothers and fathers.

Changes in Family Functioning

A summary of the percentages of participants in the PT and D-AC groups showing clinically significant changes for all measures related to family functioning appears in Tables 38 through 41.

χ^2 analyses revealed significant differences in marital satisfaction (LWMAS) as endorsed by fathers at follow-up, [$\chi^2(2) = 6.00, p = .05$]. Relatively larger numbers of fathers in the PT group experienced no change or a decrease in their marital satisfaction,

as compared to fathers in the D-AC group. In terms of parenting alliance, χ^2 analyses yielded non-significant findings for mothers and fathers.

CHAPTER IV

DISCUSSION

Prior research has indicated that PT is an efficacious treatment for children with AD/HD and is related to reductions in symptoms associated with the disorder (e.g. Corkum, et al., 2005) as well as comorbid conditions (e.g. Chronis, et al., 2004). In addition to improving child behavioral variables, PT studies have demonstrated improvements in parenting outcomes such as parenting stress, parenting self-esteem (e.g. Anastopoulos, et al., 1993), and parenting strategies (Webster-Stratton, 1998). Despite encouraging results, few conclusions can be made about the efficacy of PT given the inconsistent manner in which PT programs have been implemented. Also remaining unclear is whether reported clinical improvements are due to altered parenting styles or other factors targeted by PT programs.

In response to this situation, the current study conducted a therapeutic component analysis to determine whether a complete PT program, which included contingency management and AD/HD counseling following a cognitive-behavioral approach (Anastopoulos & Barkley, 1990), was superior to AD/HD counseling alone. Participants' reports suggested that the experimental manipulation was effective, as mothers and fathers in the PT and D-AC group reported comparable increases in knowledge of AD/HD during active treatment that was maintained over time. In addition, relative to

mothers in the D-AC group, mothers in the PT group reported increases in knowledge of contingency management, and both mothers and fathers in the PT group reported improved parenting strategies. When examined in terms of their clinical significance, findings revealed that a greater number of mothers in the D-AC group reported increases in their knowledge of AD/HD. This makes intuitive sense given the more intensive delivery of AD/HD knowledge to participants in the D-AC group. Conversely, greater numbers of mothers and fathers in the PT group experienced increases in contingency management knowledge, as well as improved self-reported parenting strategies; mothers and fathers in the D-AC group either exhibited no change in their parenting strategies or less effective strategies.

Although the experimental manipulation was effective, differences in treatment effectiveness across the two groups did not emerge as anticipated. On most outcome measures, both groups experienced improvements across time. For example, mothers and fathers in both groups reported reductions in the severity of AD/HD symptoms. Similarly, PT and D-AC mothers endorsed reductions in Oppositional Defiant Disorder symptom severity, as well as improved child emotional functioning. Mothers and fathers from both groups also reported improvements in parenting stress, parenting self-esteem, and parenting alliance.

In contrast with these findings, treatment-related group differences were evident with respect to child emotional functioning and marital satisfaction. For example, fathers in the PT group reported greater improvement in child emotional functioning, whereas fathers in the D-AC group reported deteriorating functioning. Contrary to expectations,

fathers in the D-AC group reported greater satisfaction in their marital relationships, as compared to fathers in the PT group.

Additional treatment-related group differences may be inferred from the consistent pattern of trends that emerged from the reliable change analyses. In terms of changes in child functioning, greater numbers of mothers in the PT group reported reductions in the severity of their child's AD/HD symptoms. When parent functioning was examined, a higher percentage of mothers in the PT group reported decreases in parenting stress, as well as reductions in depressive symptoms. A relatively greater number of fathers in the PT group endorsed improved parenting self-esteem. Thus, whenever differences were detected, they were consistently in the direction of PT being superior to the D-AC group.

Although the results of the therapeutic component analysis are encouraging, such findings do not suggest that PT was as superior to the D-AC group as anticipated. Instead, participants from both groups displayed relatively comparable improvements, suggesting that the addition of a contingency management component did not enhance clinical improvement above and beyond the effects of increasing participants' knowledge of AD/HD. Therefore, participants in the PT group most likely benefited because of the increase in their knowledge of AD/HD, or the interaction with improvements in contingency management knowledge. Thus, contrary to expectations, increasing knowledge of AD/HD was more valuable than existing treatments would suggest.

One possible explanation of the benefits of increasing knowledge of AD/HD is that it may change parenting perceptions due to improved understanding of the disorder. Such knowledge may lead to enhanced acceptance of the child's behavior, which may in turn prevent a spill over effect that can negatively impact other domains of family functioning. This contention is consistent with the literature, which suggests that interventions aimed at improving parenting perceptions, may lead to greater and longer lasting improvement. For example, research suggests that parents derive the most benefit from parent training when they endorse higher levels of negative parenting perceptions at pre-treatment (Reid, Webster-Stratton, & Baydar, 2004). Similarly, children of mothers who continue to experience negative parenting perceptions despite intervention are at greater risk of not experiencing reductions in conduct problems (Webster-Stratton, Reid, & Hammond, 2001).

In addition to changing parenting perceptions, increasing knowledge of AD/HD may also enhance parent-child attachment by improving the global emotional climate of the home. This may in turn protect the family from experiencing the negative outcomes associated with having a child with AD/HD. Taken together, future research should recognize that teaching knowledge of AD/HD is an important treatment component as it may improve negative parenting perceptions and attachment. This is noteworthy given most PT programs emphasize contingency management only and a knowledge component may enhance traditional contingency management approaches.

When the results from the current study are compared with prior PT research (Anastopoulos et al., 1993), it is clear that a relatively lower number of participants

demonstrated reliable change. This discrepancy may be due to the fact that the current study examined the pure effects of PT, as all children were prohibited from medication management during active treatment. In contrast, the earlier study (Anastopoulos et al., 1993) did not prohibit or monitor medication status, which resulted in 19% of the subjects taking stimulant medications at the start of treatment. Thus, it is plausible that the relatively higher number of participants demonstrating reliable change in the earlier study may be related to the interaction of medication status and treatment type. Another possible explanation for the discrepancy among findings is that the current study administered PT individually, whereas the earlier study followed a group format. A group format may be superior, as it allows participants to benefit from the knowledge and support of other group members. Future PT studies are needed to determine how format may influence treatment efficacy.

An additional implication of current study is that although PT may not lead to clinical improvement for the more severe cases, it may prevent further deterioration. This is consistent with the finding that the PT and D-AC groups frequently did not differ in terms of the number of participants showing reliable change. However, in terms of parenting outcomes such as stress, depressive symptoms, and self-esteem, participants in the D-AC group often did not improve or deteriorated, whereas this was not evident for participants in the PT group. Thus, it is possible that PT may serve as a protective factor by preventing further deterioration.

Also noteworthy, findings support the need to assess treatment outcome from multiple informants. Although the majority of studies within the child literature measure

clinical improvement in terms of changes in maternal report, the current study recognized the unique contribution of father and child report. Information obtained from these informants was essential, as it revealed information related to marital satisfaction and child emotional functioning, which maternal report did not capture.

Despite these implications, certain limitations must be noted. For example, although the unequal sample sizes arose as a result of the original study design, the smaller D-AC group placed constraints on the power of statistical analyses. This circumstance, compounded with attrition rates, especially hindered analyses that examined changes across all three time points. Thus, it is likely that had the D-AC group size been larger, many of the emerging trends may have reached statistical significance.

Also unclear is whether therapeutic gains were due to changes in parenting perceptions or improvements in child behavioral functioning. Although the original grant collected information about school behavior, teacher measures were not included in the current analyses. Thus, it would be beneficial to assess whether child symptom severity reductions generalized to the school setting. One would expect that they might not generalize if the therapeutic gains were due to changes in parent cognitions only.

A possible medication confound at follow-up also requires clarification. Although children were prohibited from medication management during active treatment, they were allowed to resume medication from post-treatment to follow-up. Thus, it is possible that some of the improvements at follow-up may have been due in part to medication effects. Despite this concern, no significant findings or trends emerged at follow-up with respect to child or parent functioning. Additionally, the percentage of

children beginning medication management following active treatment was comparable across the PT and D-AC groups. Thus, given the non-significant differences in medication management between groups, it appears that a medication confound did not exist.

Lastly, although the current study addressed the unique role of fathers, findings suggest that mothers and fathers may derive different benefits from PT. For example, mothers were more likely to report reductions in parenting stress and depressive symptoms, whereas fathers endorsed improvements in terms of parenting self-esteem and marital satisfaction. Thus, it would be beneficial to expand outcome measures to better understand these mechanisms of change. For example, it would be valuable to examine attendance rates among fathers as well as the amount of session material that they reviewed at home to compensate for absences. Perhaps the difference in treatment adherence and delivery, combined with differing parenting practices for mothers and fathers, may explain the discrepancy among findings.

Despite these limitations, the findings support the prediction that a PT program, consisting of contingency management and knowledge of AD/HD, is an efficacious treatment for children with AD/HD. Additionally, results suggest that treatment aimed at increasing knowledge of AD/HD, which is rarely integrated into behavioral programs, may enhance existing treatments by improving child, parent, and family functioning.

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APPENDIX A

TABLES

Table 1

Overview of Session Outlines

Parent Training (PT)	Session	Didactic-Attention Control (D-AC)
Program overview, overview of AD/HD	1	Program overview, overview of AD/HD
Four-factor model, behavior management principles	2	Four-factor model
Positive attending/ignoring, special time	3	Assessment and treatment issues
Extending positive attending, effective commands	4	School history and current school functioning
Home poker chip/point system	5	Impact of AD/HD on child's home functioning
Response cost for minor problems	6	Impact of AD/HD on child's social-emotional functioning
Time-out for serious misbehavior	7	Rights of children with AD/HD in schools
Managing behavior in public	8	Overview of pharmacotherapy
School issues, handling future problems	9	Overview of social skills training
1-month booster session, termination and final disposition	10	1-month booster session, termination and final disposition

Table 2

Mean AD/HD Knowledge (TOAK) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	16.53 (2.76)	18.76 (2.32)	18.57 (2.41)	14.20 (3.69)	17.63 (2.55)	17.33 (2.82)
D-AC²	15.42 (2.48)	18.42 (2.91)	18.26 (2.38)	11.71 (5.71)	18.14 (1.86)	17.71 (2.69)

Note. TOAK = Test of ADHD Knowledge; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 30 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

Table 3

Mean Contingency Management Knowledge (KBPAC) Scores and Standard Deviations
(in Parentheses)

	<i>Mothers</i>			<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	10.07 (3.76)	14.31 (2.76)	14.97 (2.76)	8.93 (3.97)	13.90 (3.88)	12.76 (3.89)
D-AC²	9.11 (2.64)	12.32 (2.91)	11.89 (2.85)	8.14 (3.72)	11.00 (4.76)	11.57 (5.91)

Note. KBPAC = Knowledge of Behavioral Principles as Applied to Children; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 29 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

Table 4

Mean Self-Reported Parenting Strategies (PS) Scores and Standard Deviations (in Parentheses)

	<i>Mothers</i>			<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	3.34 (0.64)	2.46 (0.67)	2.66 (0.68)	3.39 (0.46)	2.83 (0.56)	3.05 (0.55)
D-AC²	3.21 (0.55)	2.94 (0.63)	2.79 (0.56)	3.34 (0.63)	3.28 (0.72)	3.18 (0.87)

Note. PS = Parenting Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

Table 5

Mean Children's Parenting Perception (PPI) Scores and Standard Deviations (in Parentheses)

	<i>Mothers</i>			<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	18.37 (9.40)	19.76 (10.40)	20.03 (8.82)	17.66 (11.84)	19.07 (12.79)	20.13 (9.93)
D-AC²	19.68 (8.01)	19.95 (8.01)	21.11 (12.28)	20.73 (9.07)	19.93 (8.32)	25.13 (7.59)

Note. PPI = Parenting Perception Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 61 Fathers

²D-AC Group: N = 19 Mothers; 15 Fathers

Table 6

Mean Severity of ADHD Symptoms (ADHD-RS) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	29.81 (5.62)	25.97 (6.69)	24.72 (7.78)	26.86 (7.11)	23.16 (7.44)	22.12 (8.26)
D-AC²	32.35 (5.36)	28.59 (6.41)	25.00 (8.28)	26.91 (8.02)	24.73 (6.83)	24.64 (9.55)

Note. ADHD-RS = Attention-Deficit Hyperactivity Disorder- Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

Table 7

Mean Severity of Oppositional Defiant Disorder Symptoms (ODD-RS) Scores and Standard Deviations (in Parentheses)

	<i>Mothers</i>			<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	13.24 (6.82)	10.21 (5.84)	10.74 (6.37)	11.21 (6.49)	9.37 (6.47)	10.02 (6.46)
D-AC²	12.41 (5.85)	10.88 (4.66)	9.88 (5.59)	9.64 (4.39)	9.36 (5.94)	9.45 (5.99)

Note. ODD-RS = Oppositional Defiant Disorder- Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

Table 8

Mean Parent Reported Child Emotional Functioning (CBCL-Internalizing subscale)
Scores and Standard Deviations (in Parentheses)

	<i>Mothers</i>			<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	61.85 (8.66)	55.27 (10.73)	55.43 (10.47)	56.98 (12.48)	54.95 (13.33)	52.10 (12.91)
D-AC²	64.12 (8.65)	56.29 (10.64)	54.29 (11.46)	53.09 (15.04)	53.55 (8.62)	62.45 (18.93)

Note. CBCL = Child Behavior Checklist; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 42 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

Table 9

Mean Child Self-Reported Depression (CDI) Scores and Standard Deviations (in Parentheses)

<i>Children</i>			
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	3.04 (3.28)	2.79 (3.27)	2.13 (2.19)
D-AC²	1.53 (1.31)	1.74 (2.10)	1.32 (2.79)

Note. CDI = Children's Depression Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Children

²D-AC Group: N = 19 Children

Table 10

Mean Child Self-reported Self-Esteem (C-SEI) Scores and Standard Deviations (in Parentheses)

<i>Children</i>			
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	17.21 (4.52)	18.00 (4.97)	18.50 (4.52)
D-AC²	16.84 (4.27)	17.21 (5.72)	20.32 (4.66)

Note. C-SEI= Child Self-esteem Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Children

²D-AC Group: N = 19 Children

Table 11

Mean Parenting Stress (PSI) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	267.24 (45.77)	250.96 (48.76)	250.88 (47.64)	262.70 (42.33)	250.43 (35.96)	248.54 (41.75)
D-AC²	255.24 (44.79)	249.53 (40.80)	246.53 (48.57)	252.10 (35.74)	249.90 (39.64)	233.80 (37.93)

Note. PSI = Parenting Stress Index; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 37 Fathers²D-AC Group: N = 17 Mothers; 10 Fathers

Table 12

Mean Parental Depression (BDI) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	7.73 (6.32)	6.00 (6.05)	5.99 (6.12)	8.05 (7.19)	7.00 (6.69)	7.51 (7.73)
D-AC²	5.65 (5.41)	4.94 (4.85)	5.59 (4.76)	4.56 (2.92)	4.89 (4.43)	3.89 (3.82)

Note. BDI = Beck Depression Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 37 Fathers²D-AC Group: N = 17 Mothers; 9 Fathers

Table 13

Mean Parenting Self-Esteem (PSOC) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	59.76 (13.35)	67.39 (12.49)	67.71 (12.27)	59.44 (11.43)	64.71 (10.27)	62.61 (11.96)
D-AC²	61.88 (12.29)	70.06 (10.82)	67.71 (13.27)	64.50 (8.71)	65.80 (11.24)	68.90 (9.16)

Note. PSOC = Parenting Sense of Competence; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers²D-AC Group: N = 17 Mothers; 10 Fathers

Table 14

Mean Parenting Alliance (PAI) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	71.18 (14.33)	76.66 (13.22)	74.02 (16.21)	76.83 (11.70)	78.83 (10.68)	79.10 (10.58)
D-AC²	74.87 (8.39)	77.80 (7.10)	76.00 (11.12)	77.55 (7.19)	82.73 (7.76)	80.64 (9.56)

Note. PAI = Parenting Alliance Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 65 Mothers; 41 Fathers²D-AC Group: N = 15 Mothers; 11 Fathers

Table 15

Mean Marital Satisfaction (LWMAS) Scores and Standard Deviations (in Parentheses)

<i>Mothers</i>				<i>Fathers</i>		
<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>	<u>Pre</u>	<u>Post</u>	<u>F-U</u>
PT¹	101.71 (19.71)	102.71 (18.79)	103.63 (19.47)	104.94 (17.59)	106.53 (14.63)	104.13 (15.83)
D-AC²	109.85 (12.38)	108.08 (12.73)	107.54 (16.51)	107.11 (15.89)	110.56 (15.94)	117.89 (12.97)

Note. LWMAS = Locke-Wallace Marital Adjustment Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 56 Mothers; 32 Fathers

²D-AC Group: N = 13 Mothers; 9 Fathers

Table 16

Percentages of Participants Showing Clinically Significant Increases in ADHD Knowledge (TOAK) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	20	56	24	10	70	20
D-AC²	21	32	47	0	71	29

Note. TOAK = Test of ADHD Knowledge; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 30 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

$\chi^2(2) = 4.66$, $p = .10$ Mothers; $\chi^2(2) = .90$, $p = .64$ Fathers

Table 17

Percentages of Participants Showing Clinically Significant Increases in ADHD Knowledge (TOAK) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	23	60	17	20	60	20
D-AC²	5	63	32	0	57	43

Note. TOAK = Test of ADHD Knowledge; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 30 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

$\chi^2(2) = 3.95$, $p = .14$ Mothers; $\chi^2(2) = 2.63$, $p = .27$ Fathers

Table 18

Percentages of Participants Showing Clinically Significant Gains in Contingency Management Knowledge (KBPAC) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	11	27	63	7	34	59
D-AC²	16	42	42	0	86	14

Note. KBPAC = Knowledge of Behavioral Principles as Applied to Children; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 29 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

$\chi^2(2) = 2.65$, $p = .27$ Mothers; $\chi^2(2) = 6.03$, $p = .05$ Fathers

Table 19

Percentages of Participants Showing Clinically Significant Gains in Contingency Management Knowledge (KBPAC) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	7	28	65	17	34	48
D-AC²	26	42	32	29	14	57

Note. KBPAC = Knowledge of Behavioral Principles as Applied to Children; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 29 Fathers

²D-AC Group: N = 19 Mothers; 7 Fathers

$\chi^2(2) = 9.43$, $p = .01$ Mothers; $\chi^2(2) = 1.21$, $p = .55$ Fathers

Table 20

Percentages of Participants Showing Clinically Significant Improvement in Self-Reported Parenting Strategies (PS) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	8	34	58	22	39	39
D-AC²	41	41	18	50	50	0

Note. PS = Parenting Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 15.65$, $p = .00$ Mothers; $\chi^2(2) = 6.44$, $p = .04$ Fathers

Table 21

Percentages of Participants Showing Clinically Significant Improvement in Self-Reported Parenting Strategies (PS) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	17	33	50	27	34	39
D-AC²	35	41	24	50	30	20

Note. PS = Parenting Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 4.68, p = .10$ Mothers; $\chi^2(2) = 2.24, p = .33$ Fathers

Table 22

Percentages of Participants Showing Clinically Significant Reductions in Severity of ADHD Symptoms (ADHD-RS) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	34	19	47	35	30	35
D-AC²	24	41	35	27	46	27

Note. ADHD-RS = Attention-Deficit Hyperactivity Disorder - Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = 3.87$, $p = .15$ Mothers; $\chi^2(2) = .91$, $p = .63$ Fathers

Table 23

Percentages of Participants Showing Clinically Significant Reductions in Severity of ADHD Symptoms (ADHD-RS) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	24	18	58	30	30	40
D-AC²	18	18	65	36	27	36

Note. ADHD-RS = Attention-Deficit Hyperactivity Disorder - Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = .37$, $p = .83$ Mothers; $\chi^2(2) = .15$, $p = .93$ Fathers

Table 24

Percentages of Participants Showing Clinically Significant Reductions in Severity of Oppositional Defiant Disorder Symptoms (ODD-RS) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	34	53	13	42	44	14
D-AC²	35	65	0	45	55	0

Note. ODD-RS = Oppositional Defiant Disorder – Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = 2.61$, $p = .27$ Mothers; $\chi^2(2) = 1.76$, $p = .41$ Fathers

Table 25

Percentages of Participants Showing Clinically Significant Reductions in Severity of Oppositional Defiant Disorder Symptoms (ODD-RS) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	32	59	9	44	47	9
D-AC²	29	65	6	55	45	0

Note. ODD-RS = Oppositional Defiant Disorder – Rating Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 43 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = .27$, $p = .87$ Mothers; $\chi^2(2) = 1.23$, $p = .54$ Fathers

Table 26

Percentages of Participants Showing Clinically Significant Improvement in Child Emotional Functioning (CBCL-Internalizing subscale) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	30	28	42	43	36	21
D-AC²	18	35	47	64	18	18

Note. CBCL = Child Behavior Checklist; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 42 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = 1.04$, $p = .59$ Mothers; $\chi^2(2) = 1.68$, $p = .43$ Fathers

Table 27

Percentages of Participants Showing Clinically Significant Improvement in Child Emotional Functioning (CBCL-Internalizing subscale) at Follow-up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	27	39	34	38	36	26
D-AC²	12	35	53	55	45	0

Note. CBCL = Child Behavior Checklist; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 42 Fathers

²D-AC Group: N = 17 Mothers; 11 Fathers

$\chi^2(2) = 2.74$, $p = .25$ Mothers; $\chi^2(2) = 3.67$, $p = .16$ Fathers

Table 28

Percentages of Participants Showing Clinically Significant Reductions in Child Self-Reported Depression (CDI) at Post-Treatment

<i>Children</i>			
	No change or worse	Minimal change	Reliable change
PT¹	54	43	3
D-AC²	58	42	0

Note. CDI = Children's Depression Inventory;
PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Children

²D-AC Group: N = 19 Children

$\chi^2(2) = .55, p = .76$

Table 29

Percentages of Participants Showing Clinically Significant Reductions in Child Self-Reported Depression (CDI) at Follow-Up

<i>Children</i>			
	No change or worse	Minimal change	Reliable change
PT¹	51	45	4
D-AC²	42	58	0

Note. CDI = Children's Depression Inventory;
PT = Parent Training; D-AC = Didactic-Attention Control.
¹PT Group: N = 76 Children
²D-AC Group: N = 19 Children
 $\chi^2(2) = 1.57, p = .46$

Table 30

Percentages of Participants Showing Clinically Significant Improvement in Child Self-Reported Self-Esteem (C-SEI) at Post-Treatment

<i>Children</i>			
	No change or worse	Minimal change	Reliable change
PT¹	38	54	8
D-AC²	32	63	5

Note. C-SEI = Child Self-Esteem Inventory

PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Children

²D-AC Group: N = 19 Children

$\chi^2(2) = .55, p = .76$

Table 31

Percentages of Participants Showing Clinically Significant Improvement in Child Self-Reported Self-Esteem (C-SEI) at Follow-Up

<i>Children</i>			
	No change or worse	Minimal change	Reliable change
PT¹	33	50	17
D-AC²	26	37	37

Note. C-SEI = Child Self-Esteem Inventory

PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Children

²D-AC Group: N = 19 Children

$\chi^2(2) = 3.58, p = .17$

Table 32

Percentages of Participants Showing Clinically Significant Reductions in Parenting Stress (PSI) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	27	61	12	27	65	8
D-AC²	53	41	6	40	60	0

Note. PSI = Parenting Stress Index; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 37 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 4.34, p = .11$ Mothers; $\chi^2(2) = 1.29, p = .53$ Fathers

Table 33

Percentages of Participants Showing Clinically Significant Reductions in Parenting Stress (PSI) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	35	53	12	32	57	11
D-AC²	35	65	0	20	70	10

Note. PSI = Parenting Stress Index; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 74 Mothers; 37 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 2.43$, $p = .30$ Mothers; $\chi^2(2) = .65$, $p = .72$ Fathers

Table 34

Percentages of Participants Showing Clinically Significant Decreases in Parental Depression (BDI) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	33	65	1	51	43	5
D-AC²	59	35	6	67	33	0

Note. BDI = Beck Depression Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 37 Fathers

²D-AC Group: N = 17 Mothers; 9 Fathers

$\chi^2(2) = 5.78, p = .06$ Mothers; $\chi^2(2) = .97, p = .62$ Fathers

Table 35

Percentages of Participants Showing Clinically Significant Decreases in Parental Depression (BDI) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	45	45	9	49	46	5
D-AC²	71	24	6	33	67	0

Note. BDI = Beck Depression Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 75 Mothers; 37 Fathers

²D-AC Group: N = 17 Mothers; 9 Fathers

$\chi^2(2) = 3.55$, $p = .17$ Mothers; $\chi^2(2) = 1.48$, $p = .48$ Fathers

Table 36

Percentages of Participants Showing Clinically Significant Improvement in Parenting Self-Esteem (PSOC) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	21	74	5	20	78	2
D-AC²	18	82	0	50	50	0

Note. PSOC = Parenting Sense of Competence; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 1.11, p = .57$ Mothers; $\chi^2(2) = 4.05, p = .13$ Fathers

Table 37

Percentages of Participants Showing Clinically Significant Improvement in Parenting Self-Esteem (PSOC) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	20	74	7	39	56	5
D-AC²	24	76	0	40	60	0

Note. PSOC = Parenting Sense of Competence; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 76 Mothers; 41 Fathers

²D-AC Group: N = 17 Mothers; 10 Fathers

$\chi^2(2) = 1.23$, $p = .54$ Mothers; $\chi^2(2) = .51$, $p = .77$ Fathers

Table 38

Percentages of Participants Showing Clinically Significant Increases in Parenting Alliance (PAI) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	29	62	9	63	34	2
D-AC²	27	73	0	82	18	0

Note. PAI = Parenting Alliance Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 65 Mothers; 41 Fathers

²D-AC Group: N = 15 Mothers; 11 Fathers

$\chi^2(2) = 1.68, p = .43$ Mothers; $\chi^2(2) = 1.42, p = .49$ Fathers

Table 39

Percentages of Participants Showing Clinically Significant Increases in Parenting Alliance (PAI) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	43	49	8	63	34	2
D-AC²	47	47	7	73	27	0

Note. PAI = Parenting Alliance Inventory; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 65 Mothers; 41 Fathers

²D-AC Group: N = 15 Mothers; 11 Fathers

$\chi^2(2) = .07$, $p = .97$ Mothers; $\chi^2(2) = .51$, $p = .78$ Fathers

Table 40

Percentages of Participants Showing Clinically Significant Improvements in Marital Satisfaction (LWMAS) at Post-Treatment

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	46	48	5	47	47	6
D-AC²	54	46	0	33	67	0

Note. LWMAS = Locke-Wallace Marital Adjustment Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 56 Mothers; 32 Fathers

²D-AC Group: N = 13 Mothers; 9 Fathers

$\chi^2(2) = .83$, $p = .66$ Mothers; $\chi^2(2) = 1.39$, $p = .50$ Fathers

Table 41

Percentages of Participants Showing Clinically Significant Improvements in Marital Satisfaction (LWMAS) at Follow-Up

	<i>Mothers</i>			<i>Fathers</i>		
	No change or worse	Minimal change	Reliable change	No change or worse	Minimal change	Reliable change
PT¹	48	48	4	56	41	3
D-AC²	54	46	0	11	78	11

Note. LWMAS = Locke-Wallace Marital Adjustment Scale; PT = Parent Training; D-AC = Didactic-Attention Control.

¹PT Group: N = 56 Mothers; 32 Fathers

²D-AC Group: N = 13 Mothers; 9 Fathers

$\chi^2(2) = .54$, $p = .76$ Mothers; $\chi^2(2) = 6.00$, $p = .05$ Fathers